

Gonorrhoea screening programme

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The primary objective of this state-wide gonorrhoea screening programme was to screen as many females as possible in the population of Tennessee, to define the demographic characteristics of high risk groups, and to show that gonorrhoea culture should be accepted as a routine part of medical care. This first phase of the programme was designed to provide base-line data which could be used for the formulation of a national control programme.

The data of the state-wide gonorrhoea screening programme in Tennessee for the 12 months July 1, 1973, to June 30, 1974, are reported in this paper.

Methods and material

The majority of screening cultures were performed on females in the various public and private clinics in Tennessee. Thayer-Martin plates or Transgrow bottles were used for collecting specimens in the clinics. The Thayer-Martin plates were carried by hand, and the Transgrow bottles were sent by post to one of the laboratories of the Division of Laboratory Services of the Tennessee Department of Public Health for isolation of the gonococcus.

Upon arrival at the laboratories, the Transgrow media and Thayer-Martin plates were all carefully examined for the growth of colonies of *Neisseria gonorrhoeae*; criteria of collection and postal procedures; the time

interval between collection of specimen and arrival at the laboratory.

If any evidence of colony growth on the submitted media was noticed in the laboratory on arrival, it was replated on Thayer-Martin medium to obtain colonies of *N. gonorrhoeae*. The presence of *N. gonorrhoeae* was confirmed by the oxidase reaction, Gram-staining, and fluorescent antibody staining, using antgonococcal rabbit globulin-absorbed (Difco). (Fluorescent antibody staining and Gram-staining were done only when the oxidase reaction was positive.) If there was any doubt in identification of the organism after these tests, sugar fermentation reaction tests were used to confirm the presence of *N. gonorrhoeae*.

When there was no colony growth on the media submitted from the clinics, they were incubated in the laboratory for 72 hrs and read at 24-hr intervals. If there was still no growth after the 72 hrs incubation, the specimen was considered to be negative.

The media submitted to the laboratory which did not meet the standard requirements for processing and mailing, were provisionally reported as unsatisfactory. They were also incubated for 72 hrs and examined at 24-hr intervals as were the other specimens, and only reported as unsatisfactory after careful examination. The clinician was then asked to submit another specimen if possible.

Results

In the 12-month period 192,983 culture specimens were processed, the majority being from females (90 per cent. females, 10 per cent. males), and 7 per cent. were positive for gonococci. The Figure shows that the positivity rate varied from 31.7 per cent. in venereal disease clinics to 0.5 per cent. among the dependants of military personnel. Of the 192,983 cultures, only 11.1 per cent. were collected from

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TABLE 1 Percentage distribution of 59,559 positive gonorrhoea cultures, by race and age, January-June, 1974

Age (yrs)	Race							
	White		Black		Other		Total	
	No. tested	Per cent. positive	No. tested	Per cent. positive	No. tested	Per cent. positive	No. tested	Per cent. positive
14 and under	596	6.4	1,275	11.8	0	0.0	1,871	10.1
15-19	14,707	6.2	16,172	18.7	14	14.3	30,893	12.8
20-24	18,798	5.9	17,603	18.9	81	4.9	36,482	12.2
25-34	16,976	3.6	10,958	14.2	98	3.1	28,032	7.8
35 and over	8,482	1.0	4,185	6.5	16	0.0	12,683	2.8
Total	59,559	4.6	50,193	16.6	209	4.3	109,961	10.1

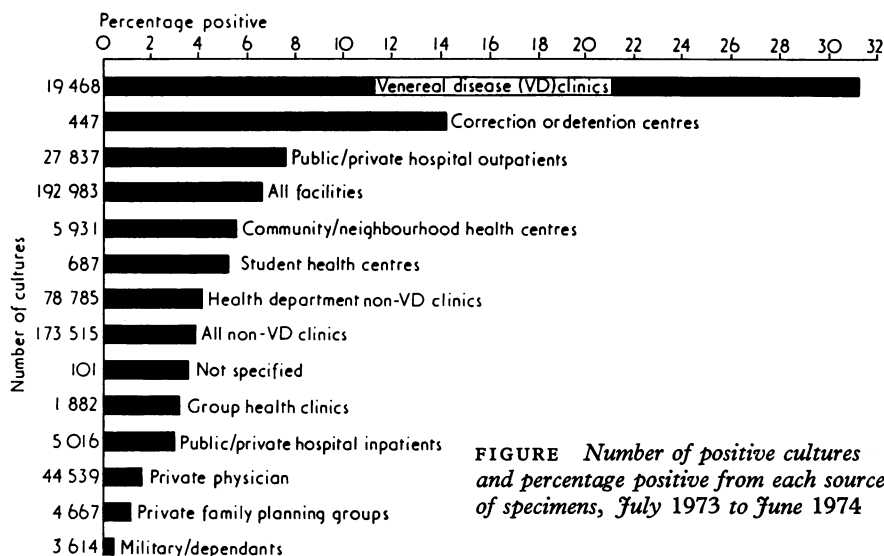


FIGURE Number of positive cultures and percentage positive from each source of specimens, July 1973 to June 1974

venereal disease clinics, the remainder coming from other facilities.

The distribution of patients screened by race and age (Table I) shows that 15 to 19-year-olds had the most positive cultures (12.8 per cent.). The percentage giving positive results among Blacks (16.6 per cent.) was about four times higher than among Whites (4.6 per cent.). Among the Whites, the highest percentage of positive cultures (13.3 per

cent.) was found in those whose marital status was 'separated' and the lowest (1.9 per cent.) in married persons (Table II). Among the Blacks, the highest percentage of positive cultures (24.4 per cent.) was found in single persons and the lowest (8.4 per cent.) in widows (Table II).

A follow-up of 61,158 persons who were screened indicated that almost all those with positive gonococcal cultures received treatment (Table III). Only 94

TABLE II Percentage distribution of 59,559 positive gonorrhoea cultures by race and marital status, January-June, 1974

Marital status	Race					
	White		Black		Total	
	No. tested	Per cent. positive	No. tested	Per cent. positive	No. tested	Per cent. positive
Single	15,897	9.6	23,851	24.4	39,748	18.5
Married	34,953	1.9	10,109	11.7	45,062	4.1
Separate	1,229	13.3	2,396	23.0	3,625	19.7
Divorced	3,034	9.9	1,150	17.0	4,184	11.8
Widowed	502	2.8	310	8.4	812	4.9
Not known	3,944	2.9	12,377	4.4	16,321	4.1
Total	59,559	4.6	50,193	16.6	109,752	10.1

TABLE III Result of 61,158 cultures by treatment, Tennessee, April-June, 1974

Treatment	Gonococcal culture			
	Positive	Negative	Unsatisfactory	Total
Treated	5,788 (9.5)	357 (0.6)	15 (0.0)	6,160 (10.1)
Untreated	94 (0.2)	53,427 (87.3)	1,454 (2.4)	54,975 (89.9)
Not known	22 (0.0)	1 (0.0)	0 (0.0)	23 (0.0)
Total	5,904 (9.7)	53,785 (87.9)	1,469 (2.4)	61,158 (100.0)

The numbers in parentheses are percentages of the total 61,158 cultures

(0.2 per cent.) of those with positive cultures did not receive treatment. In other words, 98.0 per cent. of the positive culture cases and less than 1 per cent. of the negative culture cases received treatment. Table III also shows that the result of 2.4 per cent. of the total cultures was unsatisfactory.

Discussion

The investigation of 2.4 per cent. unsatisfactory cultures revealed that the unsatisfactory results were due to the following:

- Out-of-date media;
- Dehydrated media;
- Media sent to laboratory without inoculation;
- Media posted to laboratory on the day of inoculation without being incubated overnight in the clinic;
- Media held longer than 48 hrs in the clinic before being sent to the laboratory;
- Media delayed longer than 72 hrs in the post;
- Container broken in transit.

Nevertheless, the average of 7 per cent. positive cultures obtained in Tennessee is higher than the national average of 4.3 per cent. for this same period reported by the Center for Disease Control (USPHS, 1974). A follow-up investigation of these 13,426 positive cases (7 per cent. of 192,983 cultures) showed that treatment was adequate in 12,652 (94.2 per cent.).

Among the clinics and groups included in this screening programme were some which had positive results in less than 2 per cent. of cases. The low rates of positive results among certain population groups suggests that screening should be limited to high risk groups because of rising costs, limited resources, and considerations of cost benefit and cost efficiency.

For these reasons, the author agrees with the suggestions of other investigators (Juhlin, 1968; Thatcher, McCraney, Kellogg, and Whaley, 1969; Najem and Lynn, 1971; Pedersen, 1972; Schroeter and Lucas, 1972; Blount, 1973; Connor, 1973; Handsfield, Lipman, Harnisch, Tronca, and Holmes,

1974; ASHA, 1974; Pariser, 1972) that those at high risk should be sought out. These include separated, single, and divorced persons, those aged 34 years and younger and especially those below 24 years of age. The following groups have also been suggested: those of low social class, Blacks, those with a past history of gonorrhoea, contacts of known cases of gonorrhoea, and patients from gynaecological clinics. Any department with a positivity rate below 2 per cent. could increase it by the use of selective screening rather than routine general screening for gonorrhoea.

Summary

In a 12-month period, a gonorrhoea screening programme was carried out and 192,983 cultures were collected from various sources in Tennessee; 7 per cent. were positive for gonococci. The positivity rate varied from 31.7 per cent. in venereal disease clinics to 0.5 per cent. in military dependants. The low yield of positive results in certain population groups suggests that selective screening should be undertaken in specified groups of persons at high risk of infection with gonorrhoea.

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